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**Original Research Article**

# Public private mix in tuberculosis control: is it really working in India?

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## ABSTRACT

**Background:** As significant proportions of the tuberculosis (TB) patients in India are managed by the private sector, integration of the private sector with the revised national tuberculosis control programme (RNTCP) is crucial to achieve TB control in the country**.** The RNTCP of India has been therefore involving allopathic private practitioners (PPs) since its beginning through its RNTCP- Indian Medical Association public-private mix (RNTCP-IMA PPM) project for inclusive involvement of PPs in the programme to fight against TB. The objectives of the study were to evaluate whether or not the RNTCP-IMA PPM project in India could mobilize the support of the allopathic private practitioners (PPs) by analyzing their knowledge and perception about RNTCP, and their readiness to support the programme.
**Methods:** A questionnaire based cross- sectional study was conducted in urban areas of districts of Kumaon division of Uttarakhand State of North India.
**Results:** Of 71 PPs, almost 83% knew that in RNTCP sputum acid fast bacillus (AFB) examination was the most important diagnostic test for pulmonary tuberculosis, 66.2% knew that intermittent regimens under direct observation are practiced in RNTCP, 32.4% believed drug regimens in RNTCP of questionable efficacy, 29.6% felt ignored by the programme and only 2.8% felt RNTCP a successful strategy. 50.7% PPs showed readiness to support the programme with government support.
**Conclusions:** The RNTCP-IMA PPM project seems to have performed sub-optimally as majority (97.2%) PPs did not perceive RNTCP as a successful strategy. For successful RNTCP-IMA PPM, India needs to upscale the existing PPM with strong political will and administrative commitment.

**Keywords:** TB, RNTCP, IMA, PPM

## INTRODUCTION

The revised national tuberculosis control programme (RNTCP) of India is the world's largest Tuberculosis (TB) control programme.[1] Despite country wide accessibility of free of cost TB diagnostic and treatment service under the programme, 60-88% of Indian patients irrespective of their financial status, seek TB care from the private health sector, and about 90% of them prefer to buy anti-TB drugs from the market.[2-5] This dominance of the private health sector where TB management practices are largely sub-optimal and treatment completion rate as low as 5-59%, and which usually do not notify TB cases to RNTCP, may seriously jeopardize the success of RNTCP in India.[6-10] The RNTCP has been therefore putting in efforts to involve allopathic private practitioners (PPs) through its public-private mix (PPM) with the Indian Medical Association (IMA). IMA is a national level professional body of qualified private and public allopathic practitioners which had declared its support to RNTCP in year 2004 and had endorsed the international standards of TB care in year 2008.[11] The RNTCP-IMA PPM project – Indian Medical Professional

Association Coalition Against TB (IMPACT) aided by Global Fund to fight AIDS, TB and Malaria (GFATM) round-6 (April 2007 to March 2012) was operational in the State of Uttarakhand of India from year 2009 to 2012.[12,13]

However, there was no documented information available on the effectiveness of RNTCP-IMA PPM project in aligning the PPs with RNTCP in Uttarakhand State of North India. Hence, there was a felt need to conduct this study among PPs practicing in the urban areas of Kumaon division of State of Uttarakhand which is comprised of six of the total thirteen districts of the state. The information so obtained would be useful for planning future targeted approach to ensure inclusive involvement of PPs in RNTCP.

## METHODS

The research question for the study was– could the RNTCP-IMA PPM mobilize the support of the PPs in Uttarakhand State of India. The objective of the study was to analyze the knowledge and perception of the PPs about RNTCP and their readiness to support the programme.

### *Study design and setting*

An observational cross- sectional study conducted from October 2013 to November 2014 among PPs practicing in urban areas of Kumaon region of Uttarakhand State of North India.

### *Study population*

There were about 700 allopathic medical practitioners (private+public) registered with IMA in the Kumaon division of State of Uttarakhand, of which 500 were PPs among whom the study population was selected.

### *Sample size calculation*

In the absence of reliable information, we assumed that 50% of the PPs were actively involved in RNTCP activity. The sample size was calculated by using the formula $(1.96)^2$ pq/$d^2$ at 95% confidence interval, and d= 10% desired level of precision. Thus the sample size came out to be 96. Since the sample size exceeds 5% of the source population, we used correction formula of nf= ni/(1+ni/N) where nf= corrected sample size, ni= uncorrected sample size, and N= total number of all the source population.[14] Using this formula, final sample size of 80 was required.

### *Sampling technique and study sample*

The participants were selected using purposive sampling. First author (RGN) of this study had been working in the study region for more than a decade as tertiary care academician in the field of TB and was frequently engaged as faculty in academic activities organized for PPs in the region. The investigator was hence well informed about the PPs who had rich clinical practice in the region and were frequently visible in various academic activities.

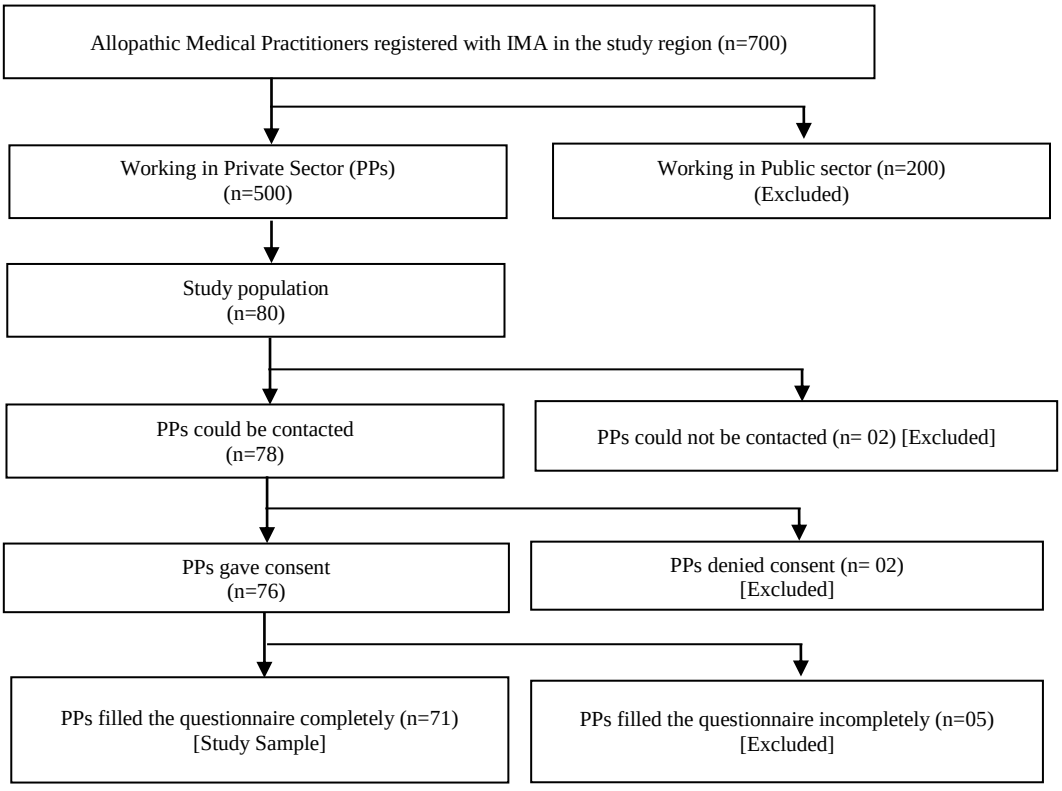


**Figure 1: Study sample selection.**

Based on this knowledge, the investigator line listed the PPs for inclusion in the study. A semi-structured questionnaire was administered to the listed PPs during different scientific activities, and the PPs were requested to fill the questionnaire in the presence of the investigator. Some listed PPs, who were missed during the scientific sessions, were approached by the investigator at their clinics. Purpose of the study, confidentiality and anonymity were explained to PPs before taking their due consent. After exclusions, a study sample of 71 PPs could be obtained for final analysis (Figure 1).

***Statistical analysis***

Data was entered in MS excel and descriptive analysis of data was done using numbers and percentages.

***Ethical consideration***

The study protocol was approved by the Institute Ethical Committee of Government Medical College Haldwani, Nainital, India.

## RESULTS

A total of 71 PPs were included in the present study for assessment of their knowledge and perception about RNTCP, and their readiness for involvement in the programme.

Table 1 shows that majority (81.7%) PPs in the study were post-graduates specialized mainly in internal and respiratory medicine, and 18.3% were graduates. About half (52.1%) PPs had some experience of working with public sector before settling in private. The average duration of practice of PPs was 17.5 years with a range from 6 months to 50 years, and majority (36.6%) had more than 20 years of practice.

Table 2 shows the knowledge of PPs about RNTCP. Majority (97.2%) PPs were aware of RNTCP and almost 83% knew that in RNTCP, sputum Acid Fast Bacillus (AFB) examination was the most important test for diagnosis of pulmonary tuberculosis (PTB). Two-third (66.2%) PPs were aware that in RNTCP intermittent drug regimens were administered under direct observation, and 50.7% knew that full course of anti TB drugs was ensured in the programme. Only one-third (33.8%) knew that drugs provided by RNTCP were of good quality.

Table 3 shows PPs' perceptions about RNTCP. About one-third (32.4%) perceived that intermittent drug regimens in RNTCP were of questionable efficacy and 22.5% believed these regimens might create multi-drug resistant TB (MDR-TB), 29.6% felt ignored by RNTCP and only 2.8% PPs perceived RNTCP as a successful strategy.

**Table 1: Socio-demographic profile of private practitioners.**

| Variables | Number (n=71) | Percent (%) |
|---|---|---|
| **Professional qualification** | | |
| Graduate | 13 | 18.3 |
| Post-graduate (internal medicine) | 32 | 45.1 |
| Post-graduate (respiratory medicine) | 10 | 14.1 |
| Post graduate (other disciplines) | 16 | 22.5 |
| **Place of practice (district)** | | |
| Nainital | 26 | 36.6 |
| Udham Singh Nagar | 32 | 45.1 |
| Almora | 09 | 12.7 |
| Pithoragarh | 03 | 04.2 |
| Champawat | 01 | 01.4 |
| **Past experience of working in public sector** | | |
| Yes | 37 | 52.1 |
| No | 34 | 47.9 |
| **Duration of practice (years)** | | |
| 0–5 | 16 | 22.5 |
| 6–10 | 13 | 18.3 |
| 11–20 | 16 | 22.5 |
| >20 | 26 | 36.6 |

**Table 2: Awareness and knowledge of private practitioners regarding RNTCP.**

| Variables | Number (n=71) | Percent (%) |
|---|---|---|
| **Aware about RNTCP** | | |
| Yes | 69 | 97.2 |
| No | 02 | 2.8 |
| **Knowledge regarding most important diagnostic test for PTB in RNTCP** | | |
| Sputum AFB examination | 59 | 83.0 |
| Chest X-ray | 05 | 7.0 |
| Chest X-ray + Sputum AFB | 02 | 2.8 |
| Chest X-ray + Sputum AFB + ESR + Montoux + TB Elisa | 05 | 7.0 |
| **Knowledge about treatment under RNTCP*** | | |
| Directly observed treatment | 47 | 66.2 |
| Intermittent regimen | 47 | 66.2 |
| Full treatment course ensured | 36 | 50.7 |
| Good quality drug | 24 | 33.8 |

*Multiple responses

Table 4 shows involvement of PPs in RNTCP. None of the PPs was involved with RNTCP for reason of need of extra manpower (55%), extra time (48%) and extra space (24%). About half (50.7%) PPs showed willingness to start RNTCP Services at their clinics if the government ensured support. Majority (95.8%) PPs preferred to diagnose and treat their TB patients self, and none kept any record of their TB patients.

**Table 3: Practitioner's perception about RNTCP.***

| Perception | Number (n=71) | Percent (%) |
|---|---|---|
| **Questionable efficacy** | 23 | 32.4 |
| **May create MDR-TB** | 16 | 22.5 |
| **Poorly tolerated** | 13 | 18.3 |
| **Compulsory sputum test is unnecessary** | 11 | 15.5 |
| **Ignores the private sector** | 21 | 29.6 |
| **Compromises patient privacy** | 03 | 4.2 |
| **Successful strategy** | 02 | 2.8 |

*Multiple responses

**Table 4: Involvement of private practitioners in RNTCP.**

| Variables | Number (n=71) | Percent (%) |
|---|---|---|
| **Running any RNTCP service** | | |
| Yes | 00 | 00.0 |
| No | 71 | 100.0 |
| **Obstructions felt in starting RNTCP services*** | | |
| Needs extra man power | 39 | 54.9 |
| Needs extra space | 17 | 23.9 |
| Needs extra time | 34 | 47.9 |
| It is Government's duty | 04 | 5.6 |
| **Readiness to start RNTCP service with government support** | | |
| Yes | 36 | 50.7 |
| No | 35 | 49.3 |
| **Referral of TB patients** | | |
| Diagnose and treat most patients self | 68 | 95.8 |
| Refer to Government hospitals | 02 | 2.8 |
| Refer to private chest specialist | 01 | 1.4 |
| **Record keeping of TB patients** | | |
| Yes | 00 | 00.0 |
| No | 71 | 100.0 |

*Multiple responses.

## DISCUSSION

In India, RNTCP is implemented through public health infrastructure. As health is a low priority state in India, resultant deficiencies prevalent in the public health sector render it less attractive to patients. Further, for reasons of convenience, flexibility, patient friendliness and individualized care available in private, majority TB patients seek treatment from private health sector.[15] This phenomenon has the potential to disrupt RNTCP's TB control efforts in India. Therefore, success of RNTCP in India critically depends on catering the private TB patients through a strong PPM. In India several small scaled earlier PPMs with limited impact had shown that integration of the private health sector into RNTCP had the potential to improve TB notifications and overall TB control in India.[16-18] Over the time, as the RNTCP moved towards universal access, the RNTCP managers felt the need of a large scale generic PPM. As a result, RNTCP-IMA PPM project– IMPACT came into existence in India to seek support of PPs to the cause of RNTCP.

Our study examined whether the GFATM round- 6 aided RNTCP-IMA PPM project– IMPACT could really succeed in getting support of PPs in Uttarakhand State of North India where it was operational from year 2009 to 2012.

On the question of knowledge of the PPs about RNTCP, our study documents that majority (97.2%) PPs were aware of RNTCP. De Costa et al from Ujjain district of Madhya Pradesh and Basu et al from West Bengal (India) had also reported that most of the PPs in their studies were aware of RNTCP.[19,20] Most PPs (83%) in our study knew that in RNTCP, sputum AFB examination was the most important diagnostic test for PTB. About two-third (66%) of the PPs knew that treatment under RNTCP was intermittent and directly observed. Half (50.7%) of the PPs were aware of the fact that once registered under RNTCP, full course of anti-TB treatment is ensured to the patient, and one-third (33.8%) PPs knew that the anti-TB drugs dispensed in RNTCP were of good quality. These findings in our study highlight that the RNTCP-IMA PPM project had provided educational input to the PPs in the State. However, ignorance among half of the PPs about provision of availability of ensured full course of anti-TB drugs and doubt in the minds of nearly two-third PPs about quality of anti-TB drugs in RNTCP reflects lack of wholesome efforts by the PPM project in educating the PPs about RNTCP.

Regarding perception of PPs about RNTCP, it was observed in this study that almost one-third (32.4%) of the PPs felt that intermittent treatment regimens in RNTCP were of questionable efficacy, and 22.5% thought these regimens might create MDR-TB. In a survey by Dosumu in Nigeria, only 11.5% of general practitioners thought the intermittent therapy as effective as daily therapy.[21] This highlights that the RNTCP-IMA PPM could not address this important issue properly. This apprehension among the PPs about the intermittent therapy was however not baseless, as a systematic review in India had reported high relapse rate (10%) among new TB patients treated with RNTCP treatment regimen.[22] However, the recent shift of the RNTCP from intermittent to daily regimen seems to be a step forward in right direction to minimize this gap between PPs and RNTCP. We found that about 29.6% PPs felt ignored by RNTCP. The same was observed by Salve et al in their study in a district of Southern India in 2011 where PPs felt neglected and undervalued in the process of implementation of the PPM-TB policy.[23] This highlights that the RNTCP-IMA PPM is largely driven by the public health sector. A very important finding in this study was that overall, only 2.8% PPs perceived RNTCP as a successful strategy. This overwhelming disbelief about the success of RNTCP strategy among majority PPs

(97.2%) may have significant public health implications in India. The PPM still needs to go a long way to overcome this perception.

Regarding involvement of the PPs in the RNTCP, it was evident in this study that PPs did not provide RNTCP service at their clinics due to constraints of manpower, space and time. This shows their indifference for a programme of much public health importance in India. However, about half (50.7%) the PPs were willing to start RNTCP service at their clinics if government would support them. In a study by Basu et al only 10% of the PPs expressed willingness to get involved in the programme which is much lower in comparison to our study.[20] Dutta et al had reported that about two-third PPs in their study showed willingness for involvement in RNTCP where Thakur et al had reported 82% of PPs expressing their willingness to participate in the programme. RNTCP can utilize this opportunity in future.[24,25]

It is pertinent to note that most (95.8%) PPs in this study did not want to refer their TB patients to the public health sector for diagnosis and treatment. There may be many reasons for non-referral. First, majority PPs did not perceive RNTCP as a successful strategy. Second, PPs felt ignored by RNTCP. Third, as TB patients may constitute a large part of practice of many PPs, referrals may cause monetary loss to them. Poor referral and no record keeping of TB patients by the PPs as is evident in this study and other studies is detrimental to successful TB notification in India.[10] Unless RNTCP infuses a strong public health sentiment in PPs, they may not keep records and refer their TB patients to public health sector.

### *Limitations*

This study was conducted using purposive sampling. However, the idea behind this type of sampling among the PPs was to examine the knowledge, perception and level of involvement of those who were academically active lead practitioners of repute in the urban areas of Kumaon region of Uttarakhand State, and were hence supposed to be maximally exposed to the PPM and best informed about RNTCP. Further, we could not interview 11% of the desired study sample. These are the usual limitations in any questionnaire based study. This study did not provide information on the non allopathic medical practitioners and practitioners practicing in rural areas. Further, the result of this study is applicable only up to year 2014, what changes in this regard happened after this period is matter for subsequent studies.

## CONCLUSION

As majority (97.2%) PPs did not perceive RNTCP as a successful strategy, the RNTCP-IMA PPM project IMPACT seems to have performed sub-optimally in convincing majority PPs to support the cause of RNTCP in India. The project's activities were probably limited to provide only superficial formal educational input to PPs about RNTCP and hence could not succeed in infusing anti-TB public health sentiment among the PPs despite willingness for involvement in RNTCP expressed by 50% PPs in this study. As poor performance of this PPM may potentially challenge the success of RNTCP, future research is needed to find reasons for sub-optimal performance of the RNTCP-IMA PPM project. For successful RNTCP-IMA PPM, India needs to upscale the existing PPM with strong political will and administrative commitment.

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*Ethical approval: The study was approved by the Institutional Ethics Committee of Government Medical College Haldwani, Nainital, India*

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